

The Perfect Game: The Effect of Perfectionism and Performance on Game Experiences

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Abstract

Perfectionism is a multidimensional personality trait, characterised by concern over mistakes, unrealistic standards and critical self-evaluation. This research investigated the effects of perfectionism, game performance, and their interaction on gaming experience. Forty undergraduates were recruited for an in-person experiment. The study recorded participants' perfectionism levels using an adapted version of the Frost Multidimensional Perfectionism Scale - Brief (FMPS-B) (Burgess et al., 2016). Participants played *Super Mario Run* (Nintendo EPD, 2016), with a task and time limit, using success/failure as a measure of game performance. The Game Experience Questionnaire (GEQ) (IJsselstein et al., 2013) was used to measure the game experience. Game experience scores were compared between groups, across low and high perfectionism, and low and high game performance. Key findings included no relationship between game experience and perfectionism scores and no interaction effect between perfectionism and game performance on the game experience. The findings may suggest that those with high perfectionism do not possess the same concern over mistakes when playing games as they do in other task performance contexts, such as in academia, sport or in the workplace. A significant effect was found, however, between game performance and game experience score.



Keywords

Perfectionism; video games; Super Mario; performance; gaming; failure; computer games; gaming; Nintendo.

Perfectionism: Highly Influential and on the Rise

Perfectionism has long been studied as an aspect of personality (Adler, 1956; Freud, 1955; Hamachek, 1978). A seminal paper by David. D. Burns (1980) described the *all or nothing* thinking of those with perfectionistic tendencies as a cognitive distortion that equated anything other than total success to catastrophe, fuelling self-criticism and an unhealthy self-image.

The current understanding of perfectionism is as a multidimensional personality trait with influence across life domains, including in relationships, competitive contexts and in the workplace. The Frost Multidimensional Perfectionism Scale (Frost et al., 1990) provided a foundational self-report measure of the trait. Hewitt and Flett (1991) identified three dimensions of perfectionism, namely self-oriented perfectionism (SOP: high expectations for the self, to meet one's own standards); socially prescribed perfectionism (SPP: high expectations for oneself, to meet others' standards); and other-oriented perfectionism (OOP: high expectations for others, to meet one's own standards). This model was also termed the multidimensional perfectionism scale.

Hewitt and Flett (1991, p. 456) defined perfectionism as a "disposition," "characterised by striving for flawlessness and setting exceedingly high standards of performance, accompanied by overly critical evaluations of one's behaviour." Perfectionism started to become associated with high standards and negative reflections following failure in performance-related contexts.

More recent research by Flett et al. (2016) also found that self-oriented and socially prescribed perfectionism is associated with distress among young people. Perfectionism is rising overall, and younger generations are more perfectionistic (Curran & Hill, 2019). This analysis found that recent generations perceive that others are more demanding of them, that they are more demanding of others, and more demanding of themselves. In other words, there has been a rise across all three of Hewitt and Flett's dimensions of perfectionism among young people.

With this in mind, this paper explores the relationship between perfectionism, game performance, and the player's subjective game experience. It examines whether perfectionistic tendencies influence how games are experienced, whether success or failure affects that experience, and whether performance moderates any relationship between perfectionism and gameplay. The paper first situates perfectionism within existing psychological and game studies literature, before presenting an experimental study using *Super Mario Run* (Nintendo EPD, 2016). It concludes by discussing the implications of the findings for understanding gaming as a potentially low-stakes life domain in which concerns over mistakes may be reduced.

Gaming, Perfectionism and Failure

The average age of gamers is increasing, yet young people represent a substantial percentage of the gaming community (Entertainment Software Association, 2022). Taking Curran and Hill's findings into account, it is likely that more young people who have perfectionistic tendencies are playing games. However, research on the effects of perfectionism in gaming remains relatively nascent.

Existing research suggests that gaming is different from other pursuits in combining interaction with immersion (Klimmt & Hartmann, 2006). Unlike in the real world, games apply rules (Juul, 2013). Players learn those rules and operate within them, adjusting as needed. Video games represent a unique life domain. However Huizinga's concept of the "magic circle," (as cited in Tekinbas & Zimmerman, 2003) where gameplay exists in a bounded psychological life domain, divorced from reality, has been challenged. As Calleja (2012, p. 82) observed in "Erasing the Magic Circle," the idea that gameplay is separated from everyday life does not hold: "[A] dichotomous view on the relationship between play/games and the real world does not survive close analysis." Gameplay is a distinct "life context," but a normal, everyday one.

Games are controlled environments. They introduce challenge, risk, and failure. They provide a potentially challenging context for players with perfectionistic personality traits (Frost et al., 1990). Perfectionists set standards and react to failure to meet them with self-criticism (Shafran et al., 2002). Sagar & Stoeber (2009) have also further explored this link, illustrating that for perfectionists, fear of failure can be significant. However, in gaming, failure is inevitable and often leads to progress (Juul, 2013).

This poses interesting questions. Does gameplay, compared to the volatility of the real world, afford those with perfectionistic tendencies permission to fail? Is gaming a safe space for perfectionists, offering reduced fear of negative evaluation? Is it where perfection can be achieved? Or perhaps gaming is more challenging, less immersive, and less likely to produce flow experiences, as defined by Csikszentmihalyi & Bennett (1971), because it introduces consistent levels of failure, risk, and punishment (Laffan et al., 2016).

A study by Xun et al. (2024, p. 631) introduced the idea of "virtual domain perfectionism," which means seeking excellence and avoiding failure in virtual/digital contexts, building upon long-studied aspects of perfectionism; namely, setting high standards and fearing failure. This study examined a highly immersive and high-flow game genre: Massively Multiplayer Online Games (MMOGs). It found positive associations between these perfectionistic traits and addictive use of MMOGs, theorising how perfectionistic tendencies could be intensified by the demands of certain virtual contexts.

Game Performance and Failure

Perfectionism and failure are linked; so too is the concept of performance, as a measurement of levels of success and failure. This can be seen in the way that video games often incorporate fail states in their gameplay, with Granic et al. (2014) observing that game environments were more likely to promote persistence. After all, many games are designed for replayability, e.g., *Tetris Zone* (Blue Planet Software, 2008), *Chess* (Chess.com, n.d.), *Street Fighter II: The World Warrior* (Capcom, 1991), and *Pirates!* (MicroProse, 1987).

However, performance feedback can also affect the game experience by shaping perceptions of competence and player enjoyment. For example, leaderboards have historically been used as a common form of performance feedback, ranking player's against each other (Bowey et al., 2015). Similarly, scores are often incorporated into Game Based Learning to provide a measurable indicator of achievement (Park & Kim, 2021). More broadly, success in games can often be just the overcoming of failure (Frommel et al., 2021), which indicates the wide variety of performance feedback systems that can exist in games, all impacting how a game is received by its players.

In 2023, a "Reactions to Failure in Gaming Scale" applicable to broader game genres was developed, examining the role of perfectionism and negative reactions to failure in gaming disorder (Zsila et al., 2023). It found that for some, negative performance and self-critical perfectionism produced rumination, a dysfunctional reaction to failure. Thus, the intersection of performance and perfectionism produces a psychological dynamic worth examining.

Perfectionism and "Big Five" Personality Traits

Research linking perfectionism to personality has long noted its association with neuroticism (Hamachek, 1978). Building on this, it is useful to consider how perfectionism may relate to the broader "big five" traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism (collectively, OCEAN), which are well established in personality research (Costa & McRae, 1992). Within the OCEAN framework, perfectionism can be viewed as a personality trait that reflects these core aspects of personality.

Building on these models, Stoeber et al. (2009) have shown how conscientiousness can positively correlate with self-oriented perfectionism. They also found that higher neuroticism was a predictor of socially-prescribed perfectionism, unsurprising given that conscientiousness is positively associated with an individual's persistence, personal organisation and goal-directed motivations. Furthermore, other studies have examined the effects that personality traits can have across various life domains, including gameplay experiences (Buecker et al., 2020; Potard et al., 2020). Taken together, these studies point to the potential importance of the "big five" personality traits to perfectionism.

While Braun et al. (2016) linked low extraversion with gaming addiction, more recent research has also found a relationship between introversion and maladaptive perfectionism (Coleman et al., 2022). Introversion may contribute to this relationship by influencing how individuals manage social stress and engage with solitary activities. It is plausible that more introverted individuals, when combined with maladaptive perfectionistic traits, may turn to gaming as a form of structured escape or control, particularly in single-player or non-social contexts. This in turn may increase the risk of compulsive gaming behaviours, especially when gaming provides predictable, mastery-based feedback loops that align with perfectionistic goals.

Research has found that players higher in neuroticism are more likely to experience frustration, anxiety, anger and general negative affect (Drachen et al., 2010). These links suggest that a game experience may be different for those who exhibit maladaptive perfectionistic tendencies, such as concerns over mistakes.

Perfectionism and Life Domains

Prior research has suggested that people can exhibit perfectionistic tendencies in some specific domains but not in others (Stoeber & Stoeber, 2009). Building on this idea, Gaudreau & Thompson (2010) argued for domain-specific adjustment, positing that different types of perfectionism could have different effects across domains i.e., in academia, relationships, workplaces, and other pursuits. Levine & Milyavskaya (2018, p. 57) also theorised that certain life domains may grant permission for “lower standards,” concluding that some domains may offer reprieve from life’s pressures. This research is potentially relevant since game experiences could constitute a distinct recreational life domain, with their own characteristics.

While this research was primarily concerned with the influence of context, it also explored theories on the motivations underpinning perfectionism. It cited research on what was defined as “task goals” and “ego goals” (Stoeber et al., 2017, p. 4). Task goals produce focus on effort, meeting the requirements of the task, and developing competence. Ego goals focus on demonstrating superior competence in comparison with others. Experiences designed around these different goals produce different contexts. Perfectionistic strivings have positive correlations with ego goals (Stoeber et al., 2017).

In the context of a game experience, these findings suggest that games offering task or ego goals are very different. For example, single-player, low-stakes games create a different context from multiplayer, high-stakes games, in which standards are clear and failure is obvious to all. The effects of perfectionism and performance may vary widely.

Perfectionism and the Game Experience

The researchers involved in this study are all experienced with gameplay and related concepts such as game design, factors influencing engagement, retention and absorption, and “gaming culture.”

Collectively, as researchers, we are familiar with the core theories on which the frameworks used for this study were built.

Self-Determination Theory is one such core theory, framing all human activity as effort towards fulfilment through competence, relatedness and autonomy (Deci & Ryan, 1985). Game playing can be considered through this lens. Various studies (Allen & Anderson, 2018; Przybylski et al., 2010) have attempted to measure the game experience and how it meets these needs.

Perfectionism in gaming has been relatively underexplored in comparison with other life domains. In the context of gameplay, Forrest et al. (2017) examined perfectionism as a compulsion to outperform others, to blame oneself, to experience feelings of failure when unable to overcome elements (e.g., obstacles, challenges) and being unable to stop playing until game objectives had been met. This was an indication of the relationship between completionist and perfectionist gameplay. While completionism refers to a tendency to pursue every task, achievement, or collectible (aiming for 100% completion), perfectionism is the broader psychological disposition to demand flawlessness and equate mistakes with personal inadequacy. We suggest that completionist gaming approaches may be understood as one possible expression of perfectionism. The drive to complete may reflect an underlying intolerance of imperfection.

A more directly relevant study analysed the effects of perfectionism on the game experience (Hoffmann et al., 2019) among players who achieved perfect scores. It concluded that appealing to perfectionistic strivings could work to enhance learning outcomes through repeated effort but could decrease the overall motivation to continue. As the game studied was an educational waste-sorting game, the generalisability of its results are questionable. In general, the literature reviewed skewed towards extreme ends of a spectrum. At one end, the harmful potential of specific game genres (see Chen et al., 2020). At the other, the beneficial potential of the educational game (see Madani et al., 2017). This influenced our focus on a more mainstream, accessible gaming experience.

Methods for assessing the game experience have been researched. The Game Experience Questionnaire (GEQ) assesses the game experience across seven components (IJsselsteijn et al., 2013): competence, immersion, flow, negative affect, positive affect, tension, and challenge. Competence is the player's assessment of their performance. Immersion measures the extent to which the player was immersed. Flow (as defined by Csikszentmihalyi & Bennett, 1971), assesses whether the player lost track of time and levels of effort. Negative and positive affect refer to whether the player had negative or positive emotional experiences while playing. Tension measures the level of annoyance or negative emotion. Finally, challenge measures the difficulty experienced. Using these factors, we could assess the game experience and compare experience patterns.

Frameworks like the GEQ are constrained; they are not exhaustive. Our perspectives as researchers meant that we were aware of cultural factors that may influence behaviours, as well as the potential to miss factors due to cultural biases in understanding how we relate to games. For example, the GEQ does not assess a game's cultural resonance. Some gaming symbolism has significant cultural weight or meaning; for example, think of highly influential games such as *Tetris Zone*, *Grand Theft Auto* (DMA Design, 1997) or *Pokémon Red* (Game Freak, 1996). At a micro scale, the GEQ ignores individual player factors, such as previous experience with and mastery of a given game or the nostalgic investment which some players may have in a childhood game.

Existing research suggests that perfectionism and performance may influence scores, but this had not been explored in depth. This gap in the research literature, against the backdrop of increased gaming worldwide and the reported generational rise in perfectionism (Curran & Hill, 2019), suggested that there was an opportunity to explore the relationship between perfectionism, performance, and game experiences.

The Present Research

Our research explored whether there was a relationship between participants' perfectionism and participants' game experiences. It also explored the relationship between game performance and game experience, and whether there was an interaction effect between performance and perfectionism, on the game experience. This led us to our research question: What is the relationship between perfectionism, game performance and game experience?

Based on the research question, three hypotheses were proposed:

H1: There will be an interaction between high and low perfectionism and game experience.

H2: There will be a difference in game experience, by high performance or low performance.

H3: There will be an interaction effect between perfectionism and game performance, on game experience.

Method

Design

The study approach was quantitative: an in-person experiment using a multivariate between-groups design. A quantitative approach suited testing hypotheses about differences in perfectionism levels between groups. This nomothetic approach helped to mitigate against qualitative assessments regarding perfectionism, e.g., the risk of a negative bias among researchers, due to cultural norms, that perfectionism is generally a bad trait. While we acknowledge that no methodological approach is entirely free from bias, including the quantitative method used, this design provided a robust, efficient method for comparing

perfectionism and performance across two groups. It allowed for precise measurement, control over variables, and a reliable foundation from which findings could be generalised.

A multivariate between-groups design enabled more thorough comparison of the perfectionism and performance levels across the two groups; these were the two independent variables (IV) used. The first independent variable (IV1) was defined as level of perfectionism, with high and low conditions (k=2). The second independent variable (IV2) was level of game performance, with high (task success) or low (task failure) (k=2). The dependent variable (DV) was the game experience.

An interaction effect was studied and a 2-way Analysis of Variance (ANOVA) was used. The 2-way ANOVA enabled analysis of how each independent variable (perfectionism and performance) affected the dependent variable (game experience) individually, and how they might have interacted to influence it together. The multivariate between-groups design was useful to capture the complexity of how these variables might have interacted and influenced each other.

Participants

40 participants were recruited for this study, with ten participants required for each group: Group A with high perfectionism & low game performance, Group B with high perfectionism and high game performance, Group C with low perfectionism and low game performance, and Group D with low perfectionism and high game performance.

Table 1 below illustrates.

		IV2 – Game Performance	
		Low	High
IV1 – Perfectionism	High	Group A Game Experience	Group B Game Experience
	Low	Group C Game Experience	Group D Game Experience

Table 1. Participant groups

For a study of this type, in order to provide robust data for the ANOVA using SPSS (Statistical Package for the Social Sciences), 40 participants were needed. For a study of this nature, it was appropriate to look for medium rather than small effect sizes. Prior research suggested perfectionism could potentially have a noticeable influence on gaming experiences and, therefore, medium effect sizes were sought. The sensitivity of instruments such as the FMPS-B and GEQ were also more suited to medium effect size detection. This approach also considered the practicalities of recruiting for an on-campus, in-person study.

Cohen's research on effect sizes established that effect sizes of 0.2 can be considered small and 0.5 medium (Cohen, 2013). The below screenshot from G*Power, a statistical power analysis tool, illustrates the minimum participant pool required to determine variance in medium effect sizes (i.e. > 0.5), across four groups. It suggests the minimum number of participants in this type of study is 34.

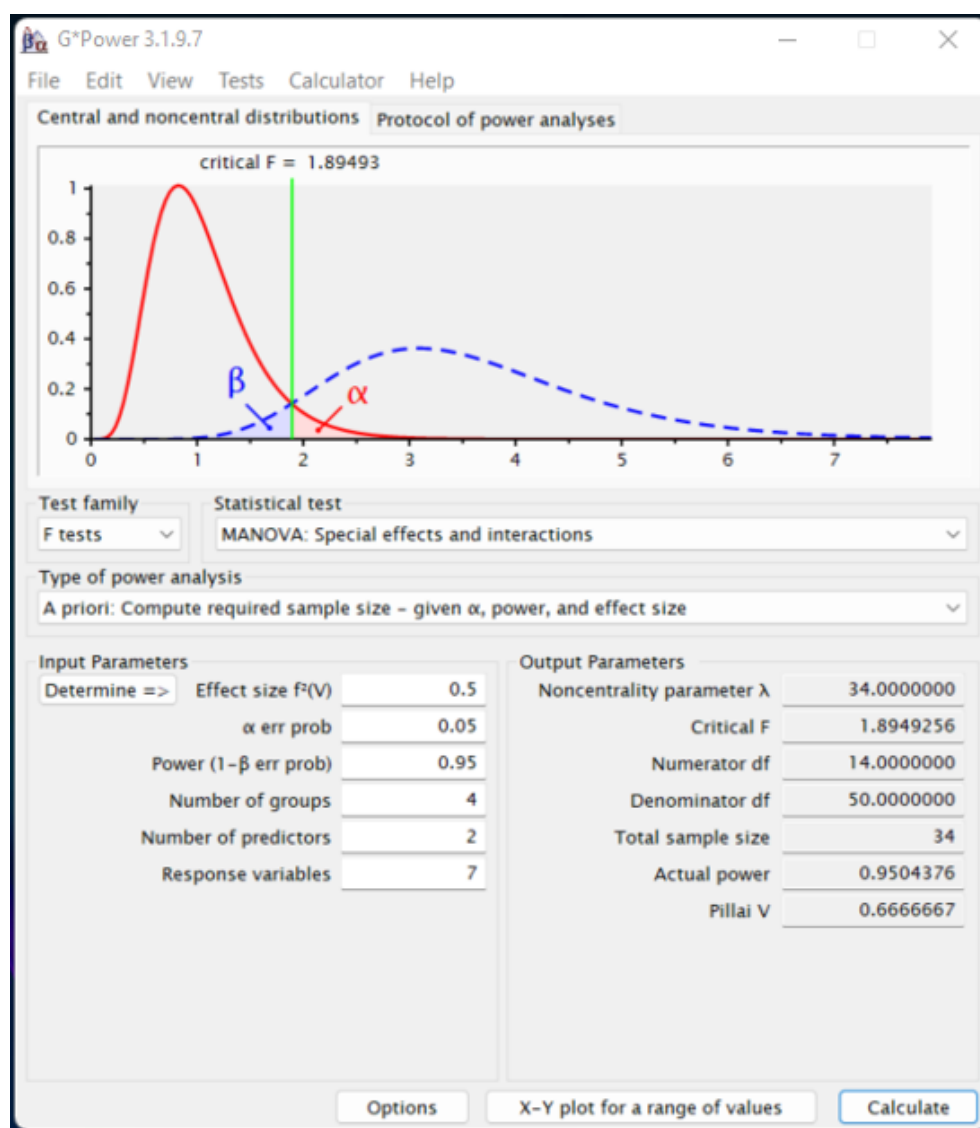


Figure 1. Medium Effect Sizes calculation - G*Power Screenshot.

This participant number of 40 was suitable. If the study had attempted to look for small effect sizes, it would require an estimated 74 participants. This would have been impractical for this in-person experiment, conducted one-to-one, within the timeframes available.

The Frost Multidimensional Perfectionism Scale – Brief (FMPS-B) (Burgess et al., 2016) scored participants with a minimum score of 8 and a maximum of 40. Higher scores indicated more perfectionistic tendencies. For this study, the mean was used as a method to

determine whether participants were allocated as high and low in perfectionism. Those under the mean were judged low in perfectionism and those over the mean judged high in perfectionism. Failure at the task was determined as low game performance. Success at the task was determined as high game performance. During the research, the pass criterion was adjusted to ensure minimum numbers were reached for each group.

The sampling methods were snowball, referral, and convenience sampling. These methods involve asking existing study participants to recruit others from among friend groups. In a campus context, this was the most pragmatic way to achieve the sample size. Participants were of mixed gender. 56% of respondents were female, 39% male, and 5% non-binary. Participants indicated their age by selecting a bracket (18-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75 years or older, or "prefer not to say"). The majority (85%, 34 people) were 18-24, 7.5% (3) were 25-34, 5% (2) were 35-44, and 2.5% (1) 45-54.

Recruitment was conducted in-person. Posters with a QR code linking to a volunteer form were placed on campus. The researcher visited lecture theatres to invite participation and approached groups on-campus. 18 participants were recruited via approaches to classes. 22 participants were directly recruited in-person. 0 participants were recruited from posters. No additional incentives were provided.

Materials

All materials were configured and pilot tested in January 2023. A first round of testing included three sample participants. Following that testing, the 33-point GEQ was broken over two sections. Data collection commenced in February 2023.

Perfectionism was assessed using the FMPS-B, as adapted by Burgess et al. (2016). This version consists of 8 items measuring two dimensions: striving for perfection and evaluative concerns, offered by the authors for use in contexts requiring a shorter yet still reliable version. The format is an eight-question survey with 5-point Likert Scale, with participants self-declaring responses. The items are scored from 1 (strongly disagree) to 5 (strongly agree), for a minimum total score of 8 and a maximum of 40, and minimum subscale score of 4–20. Higher scores indicated more perfectionistic tendencies. The overall internal Cronbach's alpha for the 8-item FMPS-B was .622.

The game experience was assessed using the GEQ (IJsselsteijn et al., 2013). The GEQ is a 33-question survey with 5-point Likert scale, with participants self-declaring responses, indicating to what extent statements accurately described their game experience, from 1 (not at all) to 5 (extremely). The Cronbach's Alpha for the 33-item GEQ was calculated at .793.

Participants' game performance was researched using *Super Mario Run*, a mobile game application. *Super Mario Run* uses an "endless runner" mechanic, where the character runs automatically. The player taps to

avoid obstacles, defeat opponents and progress. The objective is to reach level end without the character dying i.e., falling off-screen or enemy contact. Character death results in level restart. *Super Mario Run* was selected for pragmatic reasons: the game mechanic is widely known and the endless runner mobile gameplay is intuitive. The game is appealing, immersive, and accessible for new or novice players. The game also provides clear feedback on success and failure.

The purchased version of the game was used to avoid interruptions from upgrade prompts. The device used was an iPhone 12 Pro on iOS v16.1.2 with a resolution of 390x844. Audio was adjusted so the participant could hear game audio. A timer was used to track 10-minute gameplay.

An information sheet outlined the purpose of the research and what would be required. A form captured participant consent to use their information in the research. Demographic information, such as gender and age, was voluntarily provided before research began. A debrief form was provided following participation.

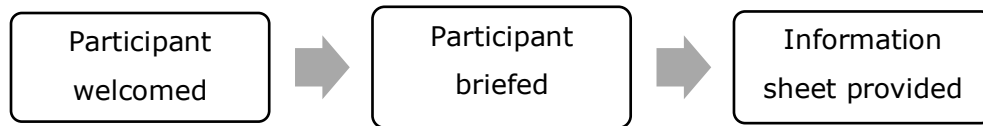
We did not collect data on participants' prior gaming experience or familiarity with *Super Mario Run*. This decision was made in part to avoid priming participants or influencing their confidence or expectations ahead of the task. Additionally, the study design aimed to minimise variability in task familiarity by using a game with relatively simple, intuitive mechanics. This made it broadly accessible, regardless of prior experience.

We acknowledge that individual gaming experience may introduce some performance variability. However, we did not anticipate systematic differences in prior experience across groups. Therefore, while this is a limitation, we do not believe it compromises the validity of the group comparisons.

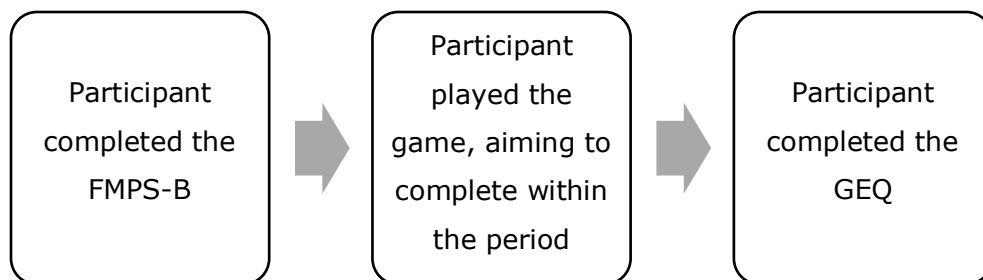
Procedure

Each participant attended a one-to-one quiet room with the researcher and the experiment began, taking approximately 20 minutes. See the below flow diagram (Figure 2) which illustrates the proceedings of the study:

Stage 1 - Introduction



Stage 2 - Participation



Stage 1 - Debrief & confirmation



Figure 2. Flow diagram of the procedure used in the study.

Participants were briefed to complete a task—"World 1" of the game, including four levels—within 10 minutes. All were informed as to whether they had succeeded or failed. In order to ensure there were enough high game performance scores (successes) and low game performance scores (failures) to provide the appropriate breakdown of groups for analysis, the study was adjusted for a number of participants, challenging them to complete the game task within 5 minutes. Thirty participants (75%) had the 10-minute task while ten participants (25%) had the 5-minute task.

Results

This research aimed to determine whether there was a relationship between levels of perfectionism and game experience scores, also investigating whether there was a relationship between game success/failure and game experience scores. Analysis also included the interaction effect between perfectionism and game performance on game experience scores.

Analysis 1: Relationship Between Perfectionism and Game Experience Scores

19 participants scored low in game performance (failed). 21 participants scored high in game performance (succeeded). The mean perfectionism score recorded by the 40 participants on the FMPS-B scale was 25 (minimum possible score 8, maximum possible score 40).

Scores between 8 and 24 were interpreted as low perfectionism. Scores between 25 and 40 were interpreted as high perfectionism. Using these criteria, 16 participants scored low in perfectionism and 24 participants scored high in perfectionism. Table 2 below illustrates the groups across perfectionism and game performance scores.

		IV2 – Game Performance	
		Low	High
IV1 – Perfectionism	High	Group A 11 participants	Group B 13 participants
	Low	Group C 8 participants	Group D 8 participants

Table 2. Participant groups with number of participants.

The data collected for Analysis 1 is summarised in Table 3 below, which presents the N, Mean, and Standard Deviation values for the variables.

Analysis was conducted on the data using SPSS. Whether the levels of multidimensional perfectionism were reported as high or low did not affect the game experience score ($F = .912$, $p = .346$, $\eta^2 = .025$). The effect size was low ($\eta^2 = .025$), indicating that participants who reported higher levels of perfectionism did not have higher game experience scores than those who reported lower levels (see Table 3). The first hypothesis, that there would be an interaction between perfectionism and game experiences, was not supported.

Perfectionism	Game Performance	Mean	Min	Max	Standard Deviation	N
Low	Low (Fail)	52.5 0	39	72	11.892	8
	High (Succeed)	66.8 8	47	84	11.012	8
	Total	59.6 9	39	84	13.330	16
High	Low (Fail)	54.2 7	31	80	16.001	11
	High (Succeed)	57.4 6	42	69	9.640	13
	Total	56.0 0	31	80	12.745	24
Total	Low (Fail)	53.5 3	31	80	14.073	19
	High (Succeed)	61.0 5	42	84	10.961	21
	Total	57.4 8	31	84	12.942	40

Table 3. Mean Game Experience scores of Participants with different levels of Game Performance and Perfectionism, across the four groups (low/high perfectionism, low/high game performance).

The mean game experience score for the low-perfectionism group was 59.69 (SD = 13.330), while the mean score for the high-perfectionism group was 56.00 (SD = 12.75), indicating no significant difference. Figure 3 charts the mean score for each group and illustrates the results.

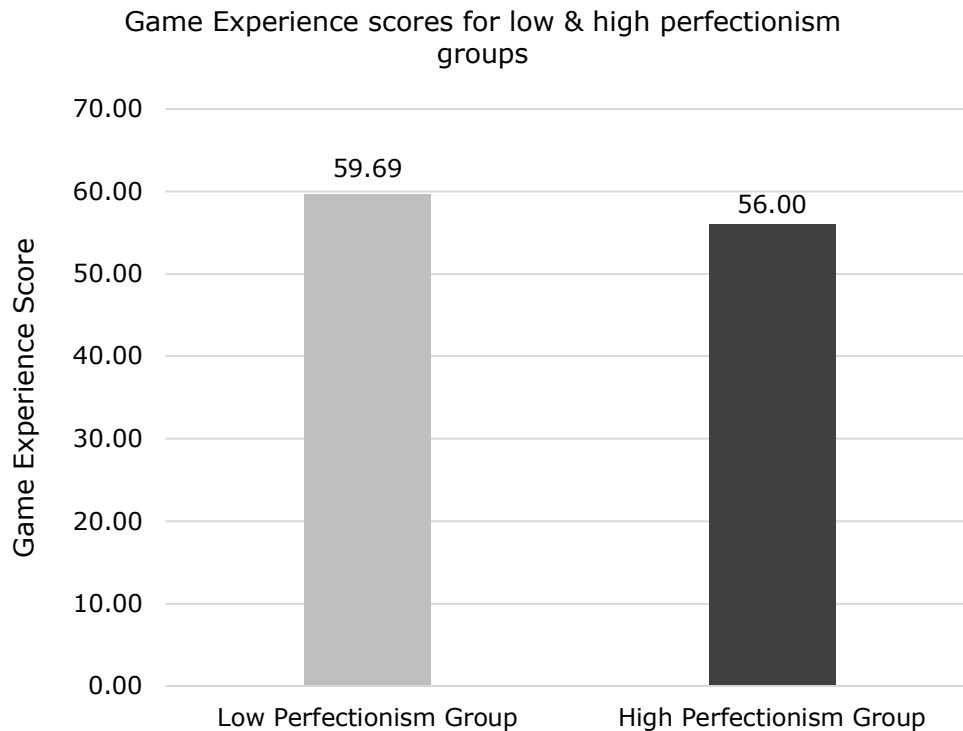


Figure 3. Mean Game Experience scores for low and high perfectionism groups.

Note: Mean Game Experience scores above, across these two groups, illustrate no significant difference between each group.

Analysis 2: Relationship Between Game Performance and Game Experience Scores

The results revealed a significant effect of game performance on the game experience score ($F = 4.820$, $p = .035$, $\eta^2 = .118$). The difference between groups ($F = 4.820$) can be considered significant. The p value of .035 is statistically significant (being less than the conventional alpha = .05). The results indicate that participants who reported higher levels of game performance had higher game experience scores than those who reported lower levels of game performance, i.e., there is evidence of a significant difference between groups (see Figure 4). The effect size was medium ($\eta^2 = .118$). The second hypothesis, that there is a difference in game experience, by success or failure, was supported.

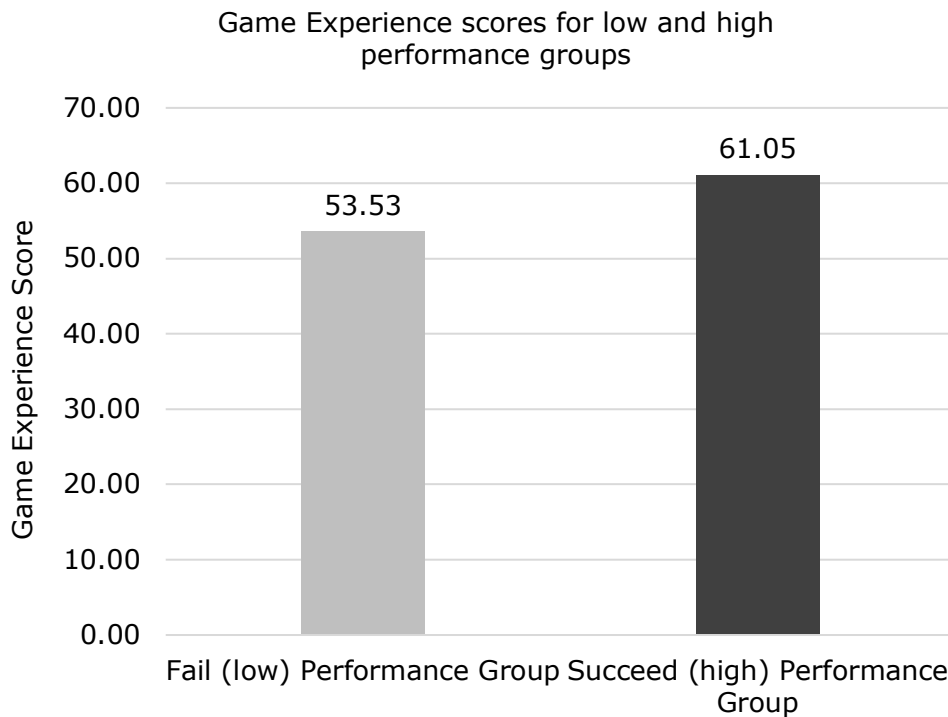


Figure 4. Mean Game Experience scores for low and high performance groups.

Note: Mean Game Experience across these two groups, illustrating a significant difference between each group.

Analysis 3: Interaction effect between perfectionism and game performance, on game experience scores

A two-way between-subjects ANOVA was performed to examine the effects of the two independent variables (perfectionism and game performance) on the single dependent variable (game experience).

The results do not show a significant interaction effect between perfectionism and game performance on the game experience score ($F = 1.955$, $p = .171$, $\eta^2 = .052$). The effect size was small ($\eta^2 = .052$). Figure 5 illustrates these results. The third hypothesis, that there is an interaction effect between perfectionism and game performance, on game experiences, was not supported.

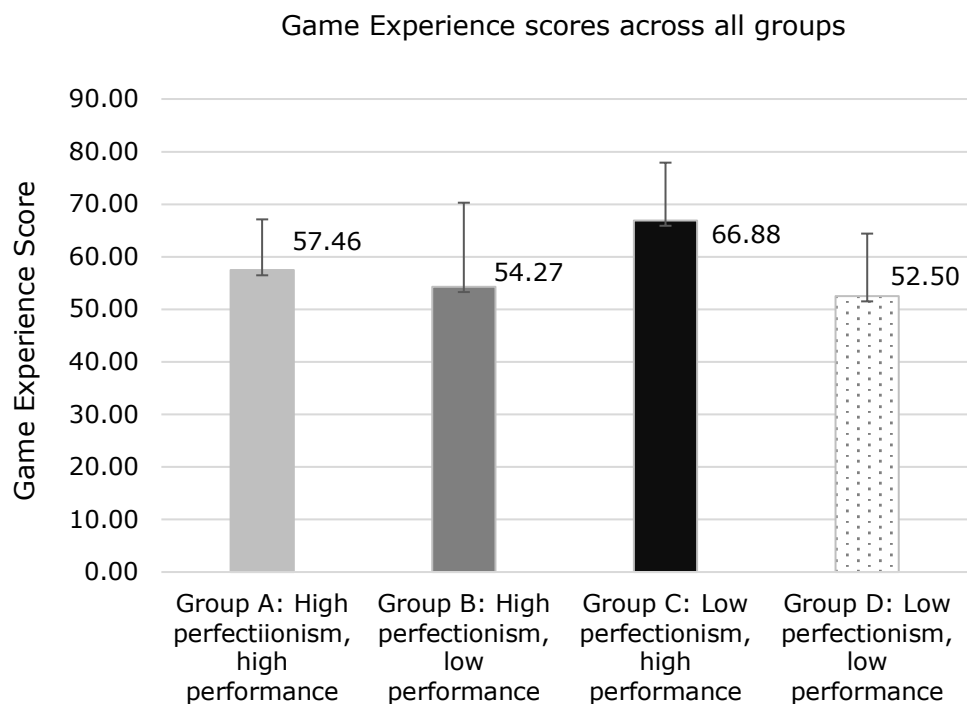


Figure 5. Mean Game Experience scores for all four groups.

Note: Similarity in scores indicates lack of a significant interaction effect between perfectionism and game performance. Error bars represent standard deviation.

The results of a Levene's Test suggest that the ANOVA test results are reliable ($p = .112$, therefore $> .05$), so there is equality of variance.

Discussion

The most significant finding from this research was that perfectionism did not have any relationship with the game experience. By comparison, the findings suggest that success or failure is of higher significance—i.e., whether the game player is high or low in perfectionism—given the significant statistical difference between the mean game experience scores of the fail (low) performance group at 53.53, and the succeed (high) performance group at 61.05 (see Figure 4). This variance is much greater than the statistical difference between the low perfectionism group at 59.69, and the high perfectionism group at 56.00 (see Figure 3). These results may indicate that gaming is a life domain where perfectionism has no power, in contrast to other domains such as the workplace, academic study, or sport (Blankstein et al., 2008; Stoeber & Damian, 2016).

This is potentially the most significant finding: that some games may be low-stakes activities, where being perfectionistic has no application. This research did not test whether all participants considered the game activity as consequence-free. An addition to the study, such as a pre- or post-questionnaire, could have illuminated this. However, the evidence

would suggest that this is how the game performance aspect of this research was experienced by players.

The hypothesis that perfectionists would have a different game experience was not supported. Therefore, it could be argued that, when gaming, perfectionists are liberated from the psychological pressures of the real world, where errors and setbacks are perceived to have higher consequences (Flett & Hewitt, 2002). They can simply enjoy games like everyone else.

The measures of the GEQ are a specific method, assessing competence, immersion, flow, negative affect, positive affect, tension, and challenge. Those metrics may be suited to certain games, e.g., mobile, single-player, offline, unobserved, casual vs. full-screen, online, observed, or multiplayer games. The game type and measurement approach means that the hypothesis was not supported in this context only and generalisability is questionable, but that is a starting point for further research.

An alternative explanation is that the specific participants in the research, the majority of whom were younger people, are not as perfectionistic or are more comfortable with (or in the case of frequent gamers, more familiar with) game failure. However, research indicates the opposite: younger generations are more perfectionistic (Curran & Hill, 2019). Another explanation for the finding is that the specific game experience tested is characterised by low-stakes, low-pressure conditions. Other game experiences, where the player has invested time and effort in mastery, or in a persistent game world, are contexts where perfectionism could have a more significant effect.

The second hypothesis, that there would be a difference in game experience by success or failure, was supported by the findings. Players who succeeded in the game reported higher gameplay experience (GEQ) scores. This is in line with research indicating that players who perceive themselves as competent enjoy games more (Przybylski et al., 2010).

The relationship between game performance and game experience scores is not moderated by levels of perfectionism; the hypothesis that there would be an interaction effect was not supported. These results suggest that the effects of game performance on game experience scores are consistent across levels of perfectionism.

This finding—that there is no interaction effect between perfectionism and game performance, on the game experience—may indicate that those with high perfectionism do not possess the same “concern over mistakes” when gaming. Numerous research studies provide evidence that maladaptive perfectionists often fear failure (Flett & Hewitt, 2002; Sagar & Stoeber, 2009). However, from this research, it seems that when they play games, specifically low-stakes games, failure does not matter to maladaptive perfectionists more than to others who do not have perfectionistic tendencies.

Practical Implications of the Research

If these results confirm previous research that gaming is a life-domain where perfectionism has no effect, then among individuals for whom perfectionism has problematic effects in other areas of their lives, gaming may offer respite and perhaps a therapeutic experience.

This study could support the case for game-based therapeutic interventions among those with maladaptive perfectionistic tendencies. Games can provide a 'sandbox' where capabilities can be found and extended to other contexts. A 2021 scoping review of gaming research found that "playing games in personally troubling times can stimulate personal change and growth by helping players develop confidence and motivation while playing and then encouraging players to transfer these newfound strengths to other areas of their daily life" (Daneels et al., 2021, p. 185).

Some studies offer strong evidence for the therapeutic potential of gaming outside of designed interventions. A frequently-cited 2009 paper by Holmes et al. proposed that playing *Tetris Zone* offered a "cognitive vaccine" that could help prevent PTSD "flashbacks," i.e., unpleasant memories rising unbidden.

The research also contributes to evidence that games provide a measure of escapism (Yee, 2006), allowing players to escape maladaptive personality traits and issues such as social anxiety.

Theoretical Implications of the Research

More broadly, the research lends weight to arguments that perfectionism is an aspect of personality that has variable effects, specific to some life domains, rather than global effects, common to all life domains. Trait theory contends that personality traits influence an individual's experiences across all life domains, including interpersonal relationships, health, work, and academic pursuits (Soldz & Vaillant, 1999). Research by Stoeber & Stoeber (2009) found that while individuals' experiences were influenced by traits, there was a variable level of effect, and specifically that for most people exhibiting this trait, perfectionism influenced their experience only in certain domains. Perfectionism does have a significant effect in academic and workplace contexts but may not in a gameplay context. The theory that perfectionism has broad applicability should therefore continue to be questioned.

Study Limitations

The study used a single-player, casual game experience. *Super Mario Run* is an endless runner platform game. Caution should be taken in assuming generalisability of results to other genres.

The recruitment approach (i.e., snowball sampling) and the study itself meant that those who more frequently play games may have been more likely to participate. For some, the prospect of "enjoying a game" may have been an incentive.

As noted in the methods section, the sampling method necessitated a change in the pass/fail criterion, reducing the task time from ten to five

minutes. Some participants may have felt success was not possible, and this may have influenced the results. However, this is unlikely, given that the relationship between success and failure, and its effect on the game experience, was significant.

A variable not included in the study design was the relative gaming experience of the participants. A recent study found that familiarity with a gaming universe affected the game experience across measures such as immersion and competence (Inal & Wake, 2022).

The design also focused on undergraduates, due to the practicalities of budget and time. That may challenge the external validity of the research. However, 85% of the participant group was comprised of 18-24-year-olds, an age group which has been found to play games more frequently than other demographics (Entertainment Software Association, 2022).

The GEQ was selected as the best available and applicable tool in assessing the game experience. Though it has good reliability and validity (Brockmyer et al., 2009), a 2018 review by Law et al. suggests that more rigorous psychometric validation of the measure is still required. Future studies could consider revising the seven-factor model in the GEQ or consider the PENS (Player Experience of Need Satisfaction) tool over the GEQ as a game experience assessment in their research (Johnson, Gardner & Perry, 2018). This study also used a single composite GEQ score to represent the game experience. While this approach provided a useful summary measure, it may have masked variation within specific subdimensions, such as affect or immersion. Future studies may benefit from analysing the GEQ subscales independently, to capture more detailed experiential profiles.

Areas for Future Research

Future research could explore whether perfectionism has an influence on game experiences in different genres. For example, real-time strategy games, sports titles, first person shooters, or simulations. All of these arenas of gaming experience are very different from the platform game tested.

Research conducted over an extended period, beyond the casual game experience in this study, would provide interesting territory for exploration. Other multi-session game experiences are very different from brief mobile gaming. Games such as *Baldur's Gate 3* (Larian Studios, 2023) in the computer role-playing game genre, or *Minecraft* (Mojang Studios, 2011) as an open-world game, involve significant cognitive and emotional commitment. They offer different research opportunities. For example, future research could consider whether those high in perfectionism have a different game experience when the game requires hours and not minutes.

Another area for research is multiplayer online games, e.g., *World of Warcraft* (Blizzard Entertainment, 2004) which has a significant social component. Observation is a context in which failure may become more

significant, as explored in the study of “virtual domain perfectionism” by Xun et al. (2024). Here, future research could consider the relationship between character optimisation, min-maxing (maximising strengths and minimising weaknesses), and perfectionism, for example.

Completionism in gaming, as a drive for mastery, parallels aspects of perfectionism, particularly self-oriented perfectionism, where individuals set high standards for themselves (Hewitt & Flett, 1991). Are perfectionistic players compelled to achieve 100% completion of a game? In this study, completionism was not examined. In other gaming contexts, completionist tendencies could be core to the experience. These other contexts are areas for future research.

A final area for future research is whether it is necessary for a game or therapeutic intervention to be designed to target perfectionism, or whether the key factor is providing access to game experiences that offer psychological relief. They may naturally induce shifts in perspectives on one’s own perfectionistic tendencies.

Conclusions

The unique ways in which individuals experience perfectionism and gaming make it challenging to draw general conclusions. The finding that perfectionism has no relationship with variability in the game experience is striking when contrasted with the influence of perfectionism in other life domains. The key factor influencing this game experience seemed to be success or failure—in other words, performance, rather than perfectionism. It also provides further evidence that context is a key determinant of experience. It finally suggests that playing “low-stakes” games may offer a context in which those with perfectionistic tendencies are liberated from concerns over mistakes and fears of failure. For these players, gaming may not just be an escape but also present promising guidance for how to understand their perfectionism.

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